What is claimed is:

1. A method for determining whether an agent facilitates the conversion of a cytoplasmic polyadenylation element binding (CPEB) protein from its non-prion form to its prion form comprising the steps of:

(a) contacting a population of cells with the agent, each of which cells comprises (i) an expressible nucleic acid comprising a sequence encoding a reporter protein that is translationally repressed by a cytoplasmic polyadenylation element (CPE) and (ii) a CPEB protein in its nonprion form; and

(b) after a suitable period of time, determining whether the amount of reporter protein expressed in the presence of the agent is greater than the amount of reporter protein expressed in the absence of the agent, whereby greater reporter protein expression in the presence of the agent indicates that the agent facilitates the conversion of a CPEB protein from its non-prion form to its prion form.

2. The method of claim 1, wherein the CPE comprises the following sequence:

5'GGAATTCGGCACCATGTGCTTCTGTAAATAGTGTATTGTGTTTTTAATGTTG GACTGGTTGGAATAAAGCTCTAGAGC-3'.

3. The method of claim 1, wherein the cell is a eukaryotic cell.

4. The method of claim 3, wherein the cell is a yeast cell.

5. The method of claim 4, wherein the yeast cell is an *S. cerevisiae* cell.

6. The method of claim 5, wherein the reporter protein is β-galactosidase.

7. The method of claim 6, wherein the amount of β-galactosidase is determined by determining, in the presence of a chromogenic substrate for β-galactosidase, the intensity of color due to β-galactosidase activity within the population of cells.

8. The method of claim 7, wherein the chromogenic substrate is 5-bromo-4-chloro-3-indolyl β-D-galactopyranoside.

9. The method of claim 1, wherein the CPEB protein is endogenously expressed in the population of cells.

10. The method of claim 1, wherein the population of cells is obtained from central nervous system tissue.

11. The method of claim 10, wherein the population of cells is a population of neuronal cells.

12. The method of claim 11, wherein the population of cells is further contacted with a neurotransmitter prior to, concurrently with, or subsequent to contacting with the agent.

13. The method of claim 12, wherein the neurotransmitter is serotonin.

14. A method for determining whether an agent facilitates the conversion of a cytoplasmic polyadenylation element binding (CPEB) protein from its prion form to its non-prion form comprising the steps of:

(a) contacting a population of cells with the agent, each of which cells comprises (i) a nucleic acid comprising a sequence encoding a reporter protein under the negative translational control of a

cytoplasmic polyadenylation element (CPE) and (ii) a CPEB protein in its prion form; and

(b) after a suitable period of time, determining whether the amount of reporter protein expressed in the presence of the agent is lower than the amount of reporter protein expressed in the absence of the agent, wherein lower reporter protein expression in the presence of the agent indicates that the agent facilitates the conversion of a CPEB protein from its prion form to its non-prion form.

15. The method of claim 14, wherein the CPE comprises the following sequence:

5'GGAATTCGGCACCATGTGCTTCTGTAAATAGTGTATTGTGTTTTTAATGTTG GACTGGTTGGAATAAAGCTCTAGAGC-3'.

16. The method of claim 14, wherein the cell is a eukaryotic cell.

17. The method of claim 16, wherein the cell is a yeast cell.

18. The method of claim 17, wherein the yeast cell is an *S. cerevisiae* cell.

19. The method of claim 18, wherein the reporter protein is β-galactosidase.

20. The method of claim 19, wherein the amount of β-galactosidase is determined by determining, in the presence of a chromogenic substrate for β-galactosidase, the intensity of color due to β-galactosidase activity within the population of cells.

21. The method of claim 20, wherein the chromogenic substrate is 5-bromo-4-chloro-3-indolyl β-D-galactopyranoside.

22. The method of claim 14, wherein the CPEB protein is endogenously expressed in the population of cells.

23. The method of claim 14, wherein the population of cells is obtained from central nervous system tissue.

24. The method of claim 23, wherein the population of cells is a population of neuronal cells.

25. A method for determining whether an agent facilitates the conversion of a cytoplasmic polyadenylation element binding (CPEB) protein from its non-prion form to its prion form comprising the steps of:

(a) contacting a population of CPEB protein with the agent, wherein a predetermined portion of the CPEB protein population is in its non-prion form; and

(b) after a suitable period of time, determining whether the portion of the CPEB protein population in its prion form is greater in the presence of the agent than in the absence of the agent, whereby a greater portion of CPEB protein in its prion form in the presence of the agent indicates that the agent facilitates the conversion of CPEB protein from its non-prion form to its prion form.

26. The method of claim 25, wherein determining the portion of the CPEB protein population in its prion form comprises determining the susceptibility of the CPEB protein to protease digestion.

27. The method of claim 25, wherein determining the portion of the CPEB protein population in its prion

form comprises determining the amount of CPEB protein aggregate collectable by centrifugation.

28. The method of claim 25, wherein determining the portion of the CPEB protein population in its prion form comprises determining the ability of CPEB protein to increase the expression of a protein that is translationally repressed by a CPE.

29. A method for determining whether an agent facilitates the conversion of a cytoplasmic polyadenylation element binding (CPEB) protein from its prion form to its non-prion form comprising the steps of:

(a) contacting a population of CPEB protein with the agent, wherein a predetermined portion of the CPEB protein population is in its prion form; and

(b) after a suitable period of time, determining whether the portion of the CPEB protein population in its non-prion form is greater in the presence of the agent than in the absence of the agent, whereby a greater percentage of CPEB protein in its non-prion form in the presence of the agent indicates that the agent facilitates the conversion of CPEB protein from its prion form to its non-prion form.

30. The method of claim 29, wherein determining the portion of the CPEB protein population in its non-prion form comprises determining the susceptibility of the CPEB protein to protease digestion.

31. The method of claim 29, wherein determining the portion of the CPEB protein population in its non-prion form comprises determining the amount of CPEB protein aggregate collectable by centrifugation.

32. The method of claim 29, wherein determining the portion of the CPEB protein population in its non-prion form comprises determining the ability of CPEB protein to increase the expression of a protein that is translationally repressed by a CPE.

33. A method for determining the amount of the prion form of cytoplasmic polyadenylation element binding (CPEB) protein in a cell comprising:

(a) introducing into the cell an expressible nucleic acid comprising a sequence encoding a reporter protein that is translationally repressed by a cytoplasmic polyadenylation element (CPE);

(b) determining the amount of reporter protein expressed in the cell; and

(c) comparing the amount of reporter protein determined in step (b) with the amount of reporter protein expressed in a cell having therein a known amount of the prion form of CPEB protein, so as to thereby determine the amount of prion form of CPEB protein in the cell.

34. A method for determining whether the prion form cytoplasmic polyadenylation element binding (CPEB) protein is present in a cell comprising:

(a) introducing into the cell an expressible nucleic acid comprising a sequence encoding a reporter protein that is translationally repressed by a cytoplasmic polyadenylation element (CPE); and

(b) determining whether the reporter protein is expressed in the cell, wherein the expression of the reporter protein indicates that the prion form of CPEB protein is present in the cell.

35. A method for facilitating the conversion of a non-prion cytoplasmic polyadenylation element binding (CPEB) protein to its prion form comprising contacting the CPEB protein with a CPEB protein in its prion form.

36. A method for facilitating the conversion of a non-prion cytoplasmic polyadenylation element binding (CPEB) protein into its prion form comprising contacting the CPEB protein with an agent that facilitates the conversion of non-prion CPEB to its prion form.

37. An isolated prion form cytoplasmic polyadenylation element binding (CPEB) protein.

38. The protein of claim 37, wherein the protein is isolated from a eukaryotic cell.

39. The protein of claim 38, wherein the CPEB protein is an *Aplysia* CPEB protein.

40. A composition comprising a therapeutically effective amount of an agent that facilitates the conversion of a cytoplasmic polyadenylation element binding (CPEB) protein from its non-prion form to its prion form, and a pharmaceutically acceptable carrier.

41. A composition comprising a therapeutically effective amount of an agent that facilitates the conversion of a cytoplasmic polyadenylation element binding (CPEB) protein from its prion form to its non-prion form, and a pharmaceutically acceptable carrier.

42. A method for making a composition comprising the steps of:

(a) identifying an agent that facilitates the conversion of a cytoplasmic polyadenylation element binding (CPEB) protein from its non-prion

form to its prion form according to the method of claim 1; and

(b) admixing the agent identified in step (a) with a pharmaceutically acceptable carrier.

43. A method for making a composition comprising the steps of:

(a) identifying an agent that facilitates the conversion of a cytoplasmic polyadenylation element binding (CPEB) protein from its prion form to its non-prion form according to the method of claim 14; and

(b) admixing the agent identified in step (a) with a pharmaceutically acceptable carrier.